

## ABSTRACT

A prestressed or post-tensioned composite structural system for bridge floors, road beds, pedestrian walkways, building floors, building walls, or similar structural elements. The structural system comprises a composite structure comprising an unfilled grating as a base component, and a prestressed, post-tensioned reinforced concrete slab as a top component. The base grating component is preferably a plurality of main bearing bars without any distribution bars or tertiary bars. The upper portions of the main bearing bars are embedded in the concrete component permitting horizontal shear transfer and creating a composite deck structure which maximizes the use of tensile strength of steel and the compressive strength of concrete.